

CLAIMS

1. A battery pack comprising:

a battery unit (12) composed of a plurality of batteries

5 (1) arranged flatly, the batteries being electrically connected with one another by either series or parallel connection, or a combination of series connection and parallel connection;

10 a pair of heat transfer plates (8a, 8b) made of a material exhibiting excellent thermal conductivity and arranged in parallel to a surface where the battery unit is arranged, of which one makes surface contact with a top-surface side of each of the batteries constituting the battery unit, and an other makes surface contact with a back-surface side of each of the batteries constituting the battery unit; and

15 a housing (2) made of a material exhibiting excellent thermal conductivity, the housing accommodating the battery unit and the pair of heat transfer plates and making surface contact with the pair of heat transfer plates.

20 2. The battery pack according to claim 1, wherein the housing (2) has projections and depressions (17) formed on its outer surface.

3. The battery pack according to claim 1, wherein the heat

transfer plates (8a, 8b) are made of aluminum, copper, magnesium, an alloy composed mainly of one of them, or a thermally conductive resin which exhibits excellent thermal conductivity.

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4. The battery pack according to claim 1, wherein the housing (2) is made of aluminum, copper, magnesium, an alloy composed mainly of one of them, or a thermally conductive resin which exhibits excellent thermal conductivity.

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5. The battery pack according to claim 1, wherein N pieces of the batteries (1) are axially connected with one another and N pieces of connected batteries are arranged in M rows in parallel to each other to constitute the battery unit (12), and

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wherein the battery unit is sandwiched between the pair of heat transfer plates (8a, 8b), which have in their inner surfaces a groove (13) whose sectional profile coincides with part of a section of the battery, such that N pieces of connected batteries are each received in the groove while being kept in

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a surface contact state.

6. The battery pack according to claim 5, wherein the battery (1) is of a cylindrical shape, and the groove (13) of the heat transfer plates (8a, 8b) has an arc-shaped section.

7. The battery pack according to claim 5, wherein the heat transfer plates (8a, 8b) are made of a thermally conductive resin exhibiting excellent thermal conductivity and exhibit softness and elasticity.

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8. The battery pack according to claim 1, wherein the housing (2) is composed of a housing body (2a) and a lid (2b), and one of the heat transfer plates (8b) is formed integrally with the housing body and the other heat transfer plate (8a) is formed integrally with the lid.

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9. The battery pack according to claim 1, further comprising: a circuit board (4) for performing electrical control; and a temperature sensor (3) for measuring battery temperature, of which both are housed in the housing (2).

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10. The battery pack according to claim 9, wherein N pieces of the batteries (1) are axially connected and are also electrically connected in series with one another, and N pieces of connected batteries are arranged in M rows in parallel to each other to constitute the battery unit (12), and wherein a circuit is provided for measuring temperature and voltage separately for each of N pieces of batteries.

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11. The battery pack according to claim 10, wherein the letter N represents numbers ranging from 1 to 12, and the letter M represents numbers ranging from 2 to 30.

- 5 12. The battery pack according to any of claims 1 to 11, wherein the battery (1) is an alkaline storage battery or a lithium-ion secondary battery.

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